

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl. No. : 10/718,086                      Confirmation No. 9418  
Applicant : Reade Clemens  
Filed : November 19, 2003  
TC/A.U. : 3724  
Examiner : Phong H. Nguyen

Docket No. : 085.10546-US-A(01-465A)  
Customer No. : 34704

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313

APPEAL BRIEF

Dear Sir:

This is an appeal to the Board of Patent Appeals and Interferences from the final rejection of claims 1 - 14, dated August 25, 2010, made by the Primary Examiner in Tech Center Art Unit 3724.

REAL PARTY IN INTEREST

The real party in interest is United Technologies Corporation of Hartford, Connecticut.

RELATED APPEALS AND INTERFERENCES

The instant application has previously been appealed to the Board of Appeals. The Board rendered a decision on July 9, 2008 (Appeal No. 2008-1265), a copy of which is appended hereto as part of Appendix C.

There are no other appeals or interferences known to Appellants, Appellants' legal representative, or assignee which will directly affect or be directly affected by or

have a bearing on the Board's decision in the pending appeal.

#### STATUS OF CLAIMS

Claims 1 - 14 are pending in the application. All claims stand finally rejected and are on appeal.

A true copy of the claims on appeal are attached hereto in Appendix A.

#### STATUS OF AMENDMENTS

No amendment was filed after final rejection.

#### SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a diamond tipped indenting tool which is used to mark the surface of metal parts. See paragraph 0002 on page 1 of the specification. As set forth in claim 1, the indenting tool (10) (see FIG. 1) comprises a shank (12) having a tip end (14) and a diamond stone (16) affixed to the tip end by a braze material (18). The diamond stone forms the point of the tool and is mounted to the tip end within 8 degrees of a <17, 12, 24> direction. See page 2, paragraph 0014 and page 3, paragraph 0019 of the specification; also see FIG. 3.

As set forth in claim 2, the shank (12) is formed from at least one of a hardened tool steel, stainless steel, and a cemented carbide. See page 2, paragraph 0015 of the specification.

As set forth in claim 3, the tool has a head (20) formed adjacent a second end of the shank. See FIG. 1 and page 2, paragraph 0015 of the specification.

As set forth in claim 4, the head is wider than the shank. See FIG. 1 and page 2, paragraph 0015 of the specification.

As set forth in claim 5, the diamond stone is a single crystal diamond stone. See page 2, paragraph 0017 of the specification.

As set forth in claim 6, the diamond stone is a single crystal diamond stone nearly free of defects. See page 2, paragraph 0017 of the specification.

As set forth in claim 7, the diamond stone comprises a synthetic single crystal diamond stone. See page 3, paragraph 0021 of the specification.

As set forth in claim 8, the diamond stone in a final ground state has a length greater than an indentation depth to be imparted to a part to be marked. See page 3, paragraph 0018 of the specification.

As set forth in claim 9, the diamond stone has a 90 degree included angle conical point. See FIG. 2 and page 3, paragraph 0020 of the specification.

As set forth in claim 10, the diamond stone has a 120 degree included angle conical point. See FIG. 2 and page 3, paragraph 0020 of the specification.

As set forth in claim 11, the braze material comprises a brazing alloy which wets both the diamond stone and the material forming the shank. See page 3, paragraph 0019 of the specification.

As set forth in claim 12, the tip end of the shank is tapered. See FIG. 1 and see page 2, paragraph 0014 of the specification.

Independent claim 13 relates to an indenting tool (10) comprising a shank (12) having an end (14) and a diamond stone (16) secured to the end in a wear resistant

orientation. The wear resistant orientation is within 8 degrees of a <17, 12, 24> direction. See FIGS. 1 and 3 of the drawings; also see page 2, paragraph 0014 and page 3, paragraph 0019 of the specification.

Independent claim 14 relates to a method of making an indenting tool (10). The method comprises the steps of providing a shank (12) having an end (14), providing a diamond stone (16), positioning the diamond stone in a wear resistant orientation and securing the diamond stone to the end. The positioning step comprises positioning the diamond stone in a wear resistant orientation of within 8 degrees of a <17, 12, 24> direction. See page 3, paragraph 0019 of the specification.

#### GROUND S TO BE REVIEWED ON APPEAL

The sole ground of rejection to be reviewed on appeal is the rejection of claims 1 - 14 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 2,663,185 to Broschke in view of U.S. Patent No. 3,781,020 to Batsch et al., U.S. Patent No. 5,785,039 to Kobayashi et al., alleged Applicant's admitted prior art (the Declaration of Mr. Dilip Shah filed on February 9, 2009) and U.S. Patent No. 4,560,853 to Ziegel.

Also to be reviewed is the propriety of the rejection on appeal given the fact that this case has previously been to the Board of Appeals with the then prior art anticipation and obviousness rejections being made by the Examiner being reversed. The instant appeal affords the Board an opportunity to speak about the practice of issuing new prior art rejections, which are clearly inferior to those previously presented and clearly defective, after a Board decision.

ARGUMENT

(A) *Patentability of Independent Claims 1, 13, and 14*

(1) Applicable Case Law

(a) Obviousness

Obviousness requires a suggestion of all elements in a claim (*CMFT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003)) and "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1741 (2007); also see *Ex parte Alexander*, 86 USPQ2d 1120, 1121 (BPAI 2007). As stated in *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

An obviousness determination also requires that a skilled artisan would have perceived a reasonable expectation of success. See *In re O'Farrell*, 853 F.2d 894, 903-04 (Fed. Cir. 1988); also see *Dystar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006). However, to have a reasonable expectation of success, one must do more than merely vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result. The prior art fails to provide the requisite reasonable expectation of success where it teaches merely to pursue a general approach that seems to be a promising field of experimentation, and where the prior art gives only general guidance as to the particular form of the claimed invention or how to achieve it. See *O'Farrell* at 903-904. The expectation of success must be founded in the prior art, not in the applicant's

disclosure. *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988).

Combining known prior art elements is not sufficient to render a claimed invention obvious if the results would not have been predictable to one of ordinary skill in the art. See *U.S. v. Adams*, 383 U.S. 39, 51 - 52 (1966). Further, it is the teachings of the prior art which provide the basis for the reasonable expectation of success. See *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986). In deciding obviousness, one must look at the prior art from the vantage point in time prior to when the invention was made; hindsight obviousness after the invention was made is not the test. See *In re Carroll*, 601 F.2d 1184 (CCPA 1979).

The fact that a claimed product is within the broad field of the prior art and one might arrive at it by selecting specific items and conditions does not render the product obvious in the absence of some directions or reasons for making such selection. See *Ex parte Kuhn*, 132 USPQ2d 1958 (Bd. App. 1961). Where the prior art gives no indication of which parameters are critical and no direction as to which of many possible choices is likely to be successful, the fact that the claimed combination falls within the scope of possible combinations taught therein does not render it obvious. In other words, the need to "pick and choose" from the available prior art should set off a warning light that hindsight reconstruction was in use. See *W. L. Gore and Associates v. Garlock, Inc.*, 721 F.2d 1550, 1553 (Fed. Cir. 1983) ("To imbue one of ordinary skill in the art with knowledge of the invention in suit when no prior art reference[s] ... of record convey or suggest that knowledge, is to fall victim to the insidious

effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.”)

Finally, an obviousness rejection may not be based on speculation, conjecture or surmise. See *In re Sporck*, 301 F.2d 686, 690 (CCPA 1962); also see *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) (“where the legal conclusion [of obviousness] is not supported by facts, it cannot stand.”). Thus assumptions as to common sense or what is known in the art cannot substitute for evidence thereof. See *In re Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002); also see *In re Zurko*, 258 F.3d 1379, 1383, 1385 (Fed. Cir. 2001).

(b) Non-analogous Art

Whether a reference is analogous art is a question of fact. See *Jurgens v. McKasy*, 927 F.2d 1552, 1558 (Fed. Cir. 1991). Two criteria have evolved for answering the question: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether reference still is reasonably pertinent to the particular problem with which the inventor is involved. See *In re Clay*, 966 F.2d 656, 658 - 59 (Fed. Cir. 1992).

The *Kahn* court has recognized that an Examiner who must employ even arguably non-analogous art to support an obviousness rejection has probably engaged in hindsight reconstruction. The Court said:

“This test begins the inquiry into whether a skilled artisan would have been motivated to combine references by defining the prior art relevant for the obviousness determination, and it is meant to defend against hindsight.” See *Kahn*, 441 F.3d at 987.

(2) Patentability of Independent Claims 1, 13, and 14

Each of independent claims 1, 13, and 14 contains a limitation as to the wear resistant orientation for the diamond mounted to the end of a shank. In each of claims 1, 13 and 14, it is said that the orientation is within 8 degrees of a <17, 12, 24> direction. It is submitted that none of the cited and applied references teach or suggest or render this limitation obvious in the independent claims obvious.

The primary reference, U.S. Patent No. 2,663,185 to Broschke, applied by the Examiner is directed to a hardness tester having a weightable indenter positioned above a specimen, a holder carrying the indenter, and supporting elements, namely leaf springs, each attached to the holder at a point spaced vertically from its attachment to the indenter and displaceable sidewise between its attachment to the indenter and to the holder respectively. The holder contains a diamond. There is no discussion of how the diamond is fastened within the holder or how the diamond is oriented to the tip. While the Examiner assumes that the diamond is fastened to an end of the holder, the actual mounting is neither discussed nor shown in the drawings. Thus, the Examiner has erroneously made the assumption that the diamond stone is affixed to a tip end. Further, there is no disclosure in Broschke of affixing the diamond stone to the tip end by a braze material as called for by claim 1 on appeal. There is also no discussion in Broschke of the orientation of the diamond stone as called for by claims 1, 13, and 14.



The Examiner cites the Shah declaration submitted by Appellant as disclosing that the <17, 12, 24> direction is inherent in a diamond stone. The Examiner errs in his analysis of the Shah declaration. There are a number of errors in the Examiner's determination that what is discussed in the Shah declaration constitutes admitted prior art. At the outset, it should be noted that the Shah declaration was specially created to discuss the invention in this case and to overcome certain rejections made by the Examiner, which rejections have been withdrawn. Since the Shah declaration does not have a date earlier than the filing date of this case, it can not possibly be prior art. Thus, to the extent that something in Shah may be construed as being admitted prior art, one must look to the specific language of the declaration.

On the alleged admitted prior art, the Examiner points to no specific language in the text of the Shah declaration which constitutes the admitted prior art. The Examiner points to Figure 1 as being the alleged admitted prior art. With regard to Figure 1 in the Shah declaration, this figure was specifically created to describe the invention at hand. It does not come from the prior art. Figure 1 merely describes the orientation which forms part of the claimed invention, nothing more. Again, the present invention has to do with orienting a diamond stone to a tip end of a shank within 8 degrees of a <17, 12, 24> direction. The Shah declaration, and particularly Figure 1, contains no language which can be said to be an admission that this orientation is known in the prior art as being the best wear resistant orientation. The legend to Fig. 1 says that it is the "Visual determination of desired 8° Range from <17 12 24> direction, with reference

to cleavage planes or natural shape of diamond stone.”  
There is not an admission that the claimed invention is known in the prior art.

With regard to the Examiner’s comment on page 6 of the office action that something which is old does not become patentable, the problem with this statement is that the Examiner has not shown the claimed invention, in particular the claimed orientation, to be old. If anything, the prior art relied upon by the Examiner shows that the claimed orientation is unknown in the prior art.

The Examiner cites the Batsch and Kobayashi references as teaching that it is well known to one skilled in the art to find directions in a diamond that have high and low wear resistant properties so that the diamond can be shaped accordingly. Appellant is compelled to point out that this is the type of general teaching that does not provide any reasonable expectation of success for an application which is different from that disclosed in the prior art references. Thus, these references could not possibly render the claimed invention obvious because they provide no guidance to the person of skill in the art as to where to start and what would be a beneficial orientation of the diamond for an indenting tool. Given the fact that there are an *infinite* number of vectors within any diamond stone, the starting point would be nothing more than guesswork given the absence of guidance by Batsch and/or Kobayashi. Batsch and Kobayashi could not possibly render the claimed invention obvious under the existing case law because they provide no guidance as to what would result in a super wear-resistant indenting performance for an indenting tool. Most notably, there is nothing in either reference which would teach or suggest that orienting the diamond within 8

degrees of a <17,12,24> direction would provide any particular wear resistance benefit. This is due in large part to the fact that neither reference relates to an indenting tool like that being claimed by Appellant. The wear which would be encountered by the Batsch and/or Kobayashi et al. devices would be vastly different from the wear encountered by an indenting tool.

The Batsch patent is directed to a diamond stylus for disc records and thus on its face is non-analogous art. The stylus in the Batsch patent is not used to form indents in a structure. Thus, Batsch is not within the same field of endeavor as the claimed invention or Broschke. In fact, the stylus in Batsch operates within a pre-existing rotating groove. As a result, it is subjected to different stresses and wear properties. Thus, one of skill in the art would recognize that it is not directed to the same problems which are being faced by Appellant. Since it is non-analogous art, one of ordinary skill in the art would not combine the references in the manner suggested by the Examiner.

The best evidence that Batsch is not directed to the same problem which Appellant has solved is that Batsch uses much different crystallographic orientations than those used by Appellant and set forth in the claims. For example, see col. 4, lines 32 - 38 where the highest abrasion resistance for the (111) plane is said to be the [112] direction in one embodiment and is [011] for a second embodiment. Thus, assuming one of ordinary skill in the art would somehow follow the teachings of Batsch, one would be lead away from the claimed invention. There is absolutely nothing in Batsch which would lead one to use the claimed orientation. Thus, one of ordinary skill in

the art would not combine Batsch with the other references because it is a teaching away from the claimed invention.

With regard to Kobayashi, it too is non-analogous art. It is directed to a diamond dresser which is used to adjust a grindstone. Thus, it too is not in the same field of endeavor as Appellant's invention or Broschke's invention. It is submitted that the wear concerns of this device are far different from the wear concerns of Appellant's indenting tool. This is again best demonstrated by the fact that Kobayashi uses crystallographic orientations which are quite different from those set forth in the claims. See the Abstract and the discussion of the {211} and {111} crystal planes; also see the discussion beginning at col. 3, line 1 to col. 4, line 43, where it is said that the maximum wear resistance is attained along the  $\langle 110 \rangle$  direction on the {211} plane. There is absolutely nothing in Kobayashi which would lead one of skill in the art to the claimed invention. In fact, it too is a teaching away from the claimed invention.

In other words, pardon the pun, neither Batsch nor Kobayashi gets the point of the present invention. In fact, as discussed above, they clearly would teach one of ordinary skill in the art away from the claimed invention. Since they teach away from the claimed invention, one of ordinary skill in the art would not combine them in the manner suggested by the Examiner and arrive at the claimed invention.

With regard to the Examiner's comments about Batsch and Kobayashi being pertinent to the particular with which Appellant was concerned, the Examiner's comments are wrong and merely made to justify the Examiner's erroneous hindsight position. Neither Batsch nor Kobayashi are

directed to the formation of an improved indenting tool having a construction similar to Appellant's tool. They are not pertinent to Appellant's problem because they do not encounter Appellant's problem. The wear encountered by Batsch and the abrasion encountered by Kobayashi are vastly different from the wear encountered by an indenting tool where a significant force needed to form an indent is applied to the end of the tool. As noted above, in Batsch, the groove which the stylus travels in has already been formed. In Kobayashi, the blade dresser is reciprocated in a direction parallel with the rotation axes of a grindstone. There is no similar reciprocation of Appellant's indenting tool. The Batsch and Kobayashi references, to the extent that they teach anything about wear resistance, are the kind of general teachings which provide absolutely no guidance to those manufacturing indenting tools of the type claimed by Appellant.

With regard to the Examiner's argument that Broschke, Batsch and Kobayashi are analogous art, the Examiner's position is in error. Appellant is not concerned with shaping a diamond at certain planes to increase the structural strength of the diamond. Appellant is concerned with how the diamond's crystal is oriented to achieve a wear-resistant indenting performance. None of the aforementioned references are directed to solving this problem. Thus, the references do not meet either the first prong or the second prong of the *Oetiker* test.

With respect to the Ziegel patent, it does not cure the above noted errors of the other cited references. It contains no teaching or suggestion of the claimed orientation of the diamond which is mounted to the tip end

of a shank. It merely discloses mounting a diamond to a shank using a brazing material.

The Examiner in significant part reaches the conclusion of obviousness by saying that since the <17, 12, 24> direction is inherent (and the Examiner has not established this point for all diamonds), it would have been obvious to one skilled in the art at the time the invention was made to do repeated experiments as taught by Batsch and Kobayashi and shape the diamond tip accordingly so that the diamond tip has a high wear resistant property. The Examiner errs because the Examiner has not applied the proper law. As noted above, **to have a reasonable expectation of success, one must do more than merely vary all parameters or try each of numerous possible choices (in this case an infinite number of possible choices) until one possibly arrived at a successful result.** The prior art references fail to provide the requisite reasonable expectation of success because they do not face Appellant's problem. Further, given the fact that there are an infinite number of potential orientations, the Examiner would have one of skill in the art perform an infinite number of tests to determine which is the best orientation. When one has to perform an infinite number of tests, it can not be said that there is a reasonable expectation of success provided by the prior art. Appellants submit that this fact is evidence that the rejection made by the Examiner is nothing more than a hindsight rejection.

Further, with regard to the Examiner's inherency argument, it should first be recognized that the Examiner has not provided any extrinsic evidence that every diamond would have a <17, 12, 24> direction. Mere possibilities or even probabilities are insufficient to establish inherency.

Further, inherency has no place in an obviousness rejection. The Examiner errs because he has provided no evidence or facts to support the statement of inherency. Obviousness must be based on facts, not unfounded assumptions.

With regard to the Examiner's comments in paragraph 3 of the action, in order to provide a reasonable expectation of success, one of the prior art references must suggest a starting point. In the rejection at hand, none of the prior art references suggest any orientation for mounting the diamond stone to the tip end of the tool. To then say the claimed invention is obvious because one can perform an infinite number of tests to arrive at the claimed direction is contrary to the existent case law. In order to determine the claimed direction is the best, one of ordinary skill in the art needs a standard somewhere in the prior art. None of the cited and applied references provide the necessary standard or starting point. Using the references at hand, one of ordinary skill in the art would have to perform an infinite number of tests without knowing what they are looking for. Applicant submits that if one has to an infinite number of tests, then the results set forth in the claim are unpredictable - no one can say an infinite number of tests is reasonable.

For these reasons, claims 1, 13, and 14 are patentable over the cited and applied prior art.

(3) Patentability of claims 2 - 10 and 12

With regard to claims 2 - 10 and 12, these claims are allowable for the same reasons as their parent claims as well as on their own accord.

With regard to claim 2, the statement of that it is well known in the art that the shank 10 is made of steel finds no support in Broschke. Broschke never identifies the material forming the shank 10. Further, the mere fact that something may be known in the prior art is insufficient to establish obviousness. The Examiner has failed to provide any articulated line of reasoning why one of ordinary skill in the art would select steel from all the potential candidates and use it in Broschke.

With regard to claim 6, the Examiner has failed to point out where either Batsch or Kobayashi, or any other reference, teach or suggest using a diamond which is a single crystal diamond which is nearly free of defects. The Examiner has failed to provide any reason why one of ordinary skill in the art would select such a diamond from all potential candidates.

With regard to claim 7, the Examiner has not made out a *prima facie* case of obviousness because the Examiner has failed to present any reason why Broschke would want to use a synthetic diamond.

With regard to claim 8, it is not clear which Figure 1 the Examiner is referencing nor how such a Figure teaches or suggests a diamond in a final ground state which has a length greater than an indentation depth to be imparted to a part to be marked. Again, Figure 1 in the Shah declaration is not prior art.

With respect to claim 9, the prior art fails to show the claimed feature. The burden of the Examiner is to find the claimed subject matter in the prior art and then set forth a reason why one would use it. The Examiner has set forth no reason why one of ordinary skill in the art would choose to provide a 90 degree angle conical point.



Contrary to the Examiner's contention, Appellant has pointed out an advantage to this claim limitation. It renders the diamond more wear resistant.

With regard to claim 10, the Examiner makes an erroneous assumption as to the state of knowledge in the prior art. There is no evidence of record to support the statement that one of ordinary skill in the art would have expected Appellant's invention to perform equally well with the 120 degree angle conical point. See *Lee*, 277 F.3d at 1345. As for Figure 5, there is nothing in Broschke that says Figure 5 is drawn to scale. Thus, the Examiner can not rely upon it to show the claimed subject matter.

With respect to claim 12, there is no disclosure that the tip end of the shank in Broschke is tapered. The point shown there is the diamond 11.

*(B) Finality of Board Decisions*

The present appeal provides the Board an opportunity to speak about the finality of its decisions and what should be in the case at the time that it is sent to the Board. This case has previously been before the Board with virtually identical claims. The only difference between the previously decided claims and the current claims are the addition of the word "stone" to the claims.

In its prior decision, the Board decided that the claims were enabled and not anticipated or rendered obvious over a single patent to Anderson. The Examiner has now come back with a five reference hindsight obviousness rejection in which one of the references is Appellant's own declaration specifically created to address a rejection in this case and in which the Examiner relies upon a factually unsupported inherency argument. It seems to Appellant that

this rejection, for the reasons set forth hereinabove, is far worse than that which had been previously presented to the Board as being the best rejection that the Examiner could make.

In Appellant's opinion, it is time to end the practice of the Examiner making these kinds of rejections after having been reversed by the Board. It is a waste of Appellant's resources and a waste of USPTO's resources. There is no reason why this case should be back at the Board. Appellant believes that it is time for the Board to take a stand and make a statement about these kinds of situations. Unless the Board provides guidance to the Examining Corps as to what it should send to the Board, there is no hope that the Board is ever going to be able to get through its backlog.

Appellant hopes that the Board takes this opportunity to speak out on the issue at hand.

#### CONCLUSION

For the foregoing reasons, the Board is hereby requested to reverse the rejection of record and remand the instant application to the Primary Examiner for allowance and issuance.

#### APPEAL BRIEF FEE

The Director is hereby authorized to charge the Appeal Brief Fee of \$540.00 to Deposit Account No. 21-0279.

Should the Commissioner determine that an additional fee is due, he is hereby authorized to charge said additional fee to said Deposit Account.

Respectfully submitted,  
Reade Clemens

By/Barry L. Kelmachter #29999/

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Date: October 25, 2010

CLAIMS ON APPEAL - APPENDIX A

1. An indenting tool comprising:

a shank having a tip end;

a diamond stone affixed to said tip end by a braze material, said diamond stone forming a point of the tool;  
and

said diamond stone being mounted to said tip end within 8 degrees of a <17,12,24> direction.

2. An indenting tool according to claim 1, wherein said shank is formed from at least one of a hardened tool steel, stainless steel, and a cemented carbide.

3. An indenting tool according to claim 1, further comprising a head formed adjacent a second end of said shank.

4. An indenting tool according to claim 3, wherein said head is wider than said shank.

5. An indenting tool according to claim 1, wherein said diamond stone is a single crystal diamond stone.

6. An indenting tool according to claim 1, wherein said diamond stone is a single crystal diamond stone nearly free of defects.

7. An indenting tool according to claim 1, wherein said diamond stone comprises a synthetic single crystal diamond stone.

8. An indenting tool according to claim 1, wherein said diamond stone in a final ground state has a length greater than an indentation depth to be imparted to a part to be marked.

9. An indenting tool according to claim 1, wherein said diamond stone has a 90 degree included angle conical point.

10. An indenting tool according to claim 1, wherein said diamond stone has a 120 degree included angle conical point.

11. An indenting tool according to claim 1, wherein said braze material comprises a brazing alloy which wets both said diamond stone and the material forming said shank.

12. An indented tool according to claim 1, wherein said tip end of said shank is tapered.

13. An indenting tool comprising:

a shank having an end;

a diamond stone secured to said end in a wear resistant orientation; and

said wear resistant orientation being within 8 degrees of a <17, 12, 24> direction.

14. A method of making an indenting tool, comprising the steps of:

providing a shank having an end;

providing a diamond stone;

positioning said diamond stone in a wear resistant orientation;

securing said diamond stone to said end; and

said positioning step comprising positioning said diamond stone in a wear resistant orientation of within 8 degrees of a <17, 12, 24> direction.

EVIDENCE - APPENDIX B

SHAH DECLARATION DATED 2/9/09

ATTACHMENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/718,086 Confirmation No. 9418  
Applicant : Reade Clemens  
Filed : November 19, 2003  
TC/A.U. : 3724  
Examiner : Phong H. Nguyen  
  
Docket No. : EH-10546A (01-465A)  
Customer No. : 34704

DECLARATION

I, DILIP SHAH, hereby declare that:

1. I am currently employed by United Technologies Corporation as a FELLOW in High Temperature Metals.
2. I have been employed by United Technologies Corporation for 31 years as a Materials Engineer and have been primarily involved in implementation of single crystal nickel base alloys.
3. I have a Ph.D. in Metallurgical Engineering.
4. I have worked in crystallographic technologies for 34 years.
5. I understand that claim 1, 13, and 14 are directed to the following subject matter:

Independent claim 1 is directed to an indenting tool comprising: a shank having a tip end; a diamond stone affixed to the tip end by a braze material, said diamond stone forming a point of the tool; and said diamond stone



being mounted to said tip end within 8 degrees of a <17, 12, 24> direction.

Independent claim 13 is directed to an indenting tool comprising a shank having an end; a diamond stone secured to said end in a wear resistant orientation; and said wear resistant orientation being within 8 degrees if a <17, 12, 24> direction.

Independent claim 14 is directed to a method of making an indenting tool, comprising the steps of: providing a shank having an end; providing a diamond stone; positioning said diamond stone in a wear resistant orientation; securing said diamond stone to said end; and said positioning step comprising positioning said diamond stone in a wear resistant orientation of within 8 degrees of a <17, 12, 24> direction.

6. I have read and understood the above-captioned patent application and the drawings. I have also read and understood the office action mailed October 9, 2008, and U.S. Patent No. 6,051,079 to Anderson et al. (hereinafter "Anderson").

7. I understand that all the claims in the application have been rejected under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement and that claims 1 - 6 and 8 - 14 have been rejected under 35 U.S.C. 102(b) as being anticipated by Anderson.

8. I understand that the enablement requirement of 35 U.S.C. 112, first paragraph is satisfied when a patent application describes the invention so as to enable one of

ordinary skill in the art to make and use same without undue experimentation.

9. It is my conclusion that one of ordinary skill in the relevant field have the written description and the drawings before him/her can make and use the claimed invention without any undue experimentation and that the rejection made by the Examiner in the office action dated October 9, 2009 is erroneous for the following reasons. It is clear from the detailed description that the present invention uses "a good quality single crystal diamond"[para. 0017], "stone" [para. 0018], and that the direction refers to a "crystallographic direction" [para. 0019]. Use of the words "single crystal", "crystallography" and "stereographic triangle" in the description makes it very clear to those using diamonds in the tool industry that the direction <17, 12, 24> are Miller indices which are very widely used in the mineral industry to describe the crystal orientation. The crystal orientation refers back to the atomic arrangement within the crystal. Such a notation is not used to describe any kind of angles typically used to describe mechanical angles such as angle of the outer surface of the diamond tip with respect to the diamond tip's axis or the diamond's tip base. Such angles may be easily described on an engineering drawing.

The choice of the carrot bracket <...> is also intentional and conforms to well accepted practice in mineralogy, geology, metallurgy and material science in general. Determination of this direction is also not a trivial mechanical measurement exercise as it refers to atomic arrangement. The stated direction can accurately be

determined by X-ray, neutron, electron, or other diffraction techniques which reflects the atomic arrangement. Selection of these agents is governed by the physics which requires that such agents have a wavelength approaching the atomic spacing within material and be energetic enough to penetrate the material.

In practice, the diamond stones are found naturally with crystal planes defined in varying degrees or can break along certain crystal planes called cleavage planes and the stated direction can be visually mapped as shown in the attached figure 1, with reference to these planes. The diamond stones of suitable size then are mounted so that the desired location will be at the center and when the stone is subsequently ground to form a conical tip, the tip will be in the stated crystallographic direction.

Thus, with the use of the specific notation and the absence of any engineering drawing, one of ordinary skill in the art, familiar with the use of diamond tools, will be able to make and use the claimed invention without any undue experimentation.

With respect to the Examiner's response to the arguments in said office action, the notation  $\langle 17, 12, 14 \rangle$  is a vector and the axes of reference to which this vector refers to are internal to the diamond crystal, not visible to the naked eye. As shown in the attached sketch in Figure 2, which is a perspective drawing depicting the arrangement of carbon atoms within a unit cube of diamond structure, the direction  $\langle 17, 12, 24 \rangle$  means a vector direction obtained by going 17 cube edges along one of the cube edges starting from the origin, then going 12 cube edges along the second cube edge normal to the first one, and then going 24 cube edges along the third cube edge

normal to the first two, and then joining the origin to the end point. The choice of the first, second, and third cube edges is arbitrary as the atomic arrangement along all three is identical. Since these cube edges are not directly visible to the naked eye, one relies on diffraction techniques or the natural cleavage planes along which the diamond stone naturally break, as discussed hereinbefore to determine how the tip of the diamond is oriented or in other words how the cube edges of the diamond crystal are oriented with respect to the tip.

Thus, the objection which has been raised by the examiner is not meaningful in this situation as x, y, and z do not refer to any visible features. In the context as shown in the sketch, within  $8^\circ$  means any vector within a  $8^\circ$  cone around the vector  $\langle 17, 12, 24 \rangle$ . Owing to the complexity of representing these ideas through a normal perspective drawing, this idea is best expressed using a stereographic projection. Those of ordinary skill in the art understand what is meant.

In conclusion, the rejection under 35 U.S.C. 112, first paragraph, should be withdrawn since the basis for rejecting the claims is invalid. The direction and the angles for orientation of the diamond tip with respect to its base refer to its atomic arrangement and not any mechanical design angles.

10. It is my understanding that a single prior art reference anticipates a claimed invention when all the limitations set forth in the claim(s) can be found expressly or inherently in that single prior art reference. With respect to the rejection of claims 1 - 6 and 8 - 14 on anticipation grounds over Anderson, the rejection fails for

the following reasons. The Anderson patent pertains to "diamond coated cutting tools" and not a diamond stone or crystal. Indeed, the Anderson patent distinguishes itself over the prior art where a diamond stone or crystal are used. Thus, there is no commonality between the Anderson patent and the claimed invention. For this reason alone, Anderson does not anticipate the subject matter of claims 1, 13, and 14. Still further, there is no disclosure in Anderson et al. of the claimed <17, 12, 24> direction. Moreover, as discussed before, the number in the <...> bracket is understood to be Miller indices and has a specific connotation which does not refer to any mechanical angles that can be described on an engineering drawing. It should also be noted that the Anderson patent is for diamond tools used in excavating industry, whereas the present invention is specifically directed at marking metal parts. The mechanical loading conditions in the two applications are sufficiently divorced that no one familiar with the application is likely to automatically consider "goodness" in one situation to be applicable to the other. The Anderson patent is intended for breaking hard materials, whereas the claimed invention is concerned with marking much softer ductile metals. The wear mechanisms in the two situations are expected to be very different and experience in one area is not translatable to the other in any manner. Anderson would have no interest in using a diamond stone secured to an end of a shank in a wear resistant orientation, which wear resistant orientation is within 8 degrees of a <17, 12, 24> direction.

The undersigned declares further that all statements made herein of their own knowledge are true and that all

statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date: Feb. 9, 2007 *Dilip M. Shah*  
DILIP SHAH

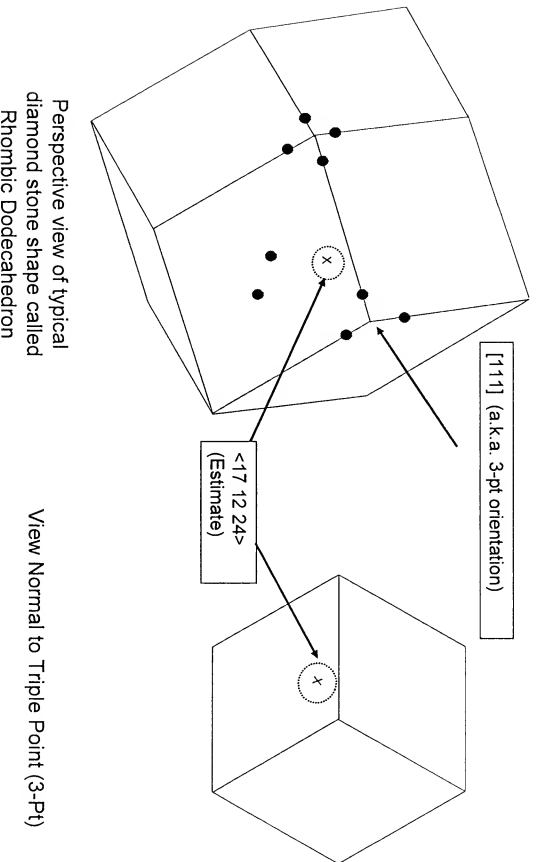


Figure 1: Visual determination of desired  $8^\circ$  Range from  $\langle 17\ 12\ 24 \rangle$  direction, with reference to cleavage planes or natural shape of diamond stone.

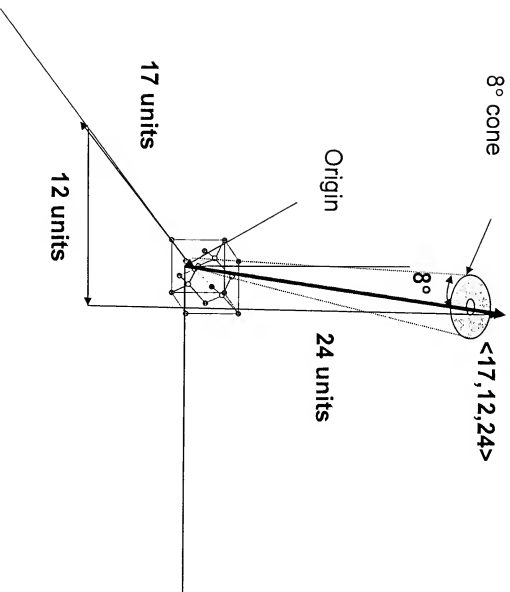


Figure 2: A perspective sketch showing the interpretation of  $\langle 17, 12, 24 \rangle$  direction, with reference to atomic arrangement of carbon atoms within a single cell of diamond crystal.



RELATED PROCEEDINGS - APPENDIX C

BOARD DECISION DATED JULY 9, 2008  
(APPEAL NO. 2008-1265)



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,086	11/19/2003	Reade Clemens	EH-10546A(01-465A)	9418

34704 7590 07/09/2008  
 BACHMAN & LAPOINTE, P.C.  
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EXAMINER
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NGUYEN, PHONG H

ART UNIT	PAPER NUMBER
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3724

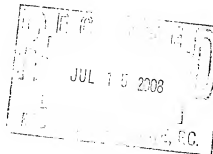
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07/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* READE CLEMENS

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Appeal No. 2008-1265  
Application No. 10/718,086  
Technology Center 3700

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Decided: July 9, 2008

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Before TERRY J. OWENS, ANTON W. FETTING and BIBHU R. MOHANTY,  
*Administrative Patent Judges.*

OWENS, *Administrative Patent Judge.*

*Resp. Due 9-9-08*

DECISION ON APPEAL

The Appellant appeals from a rejection of claims 1-14, which are all of the pending claims.

THE INVENTION

The Appellant claims an indenting tool and a method for making it. Claim 1 is illustrative:

1. An indenting tool comprising:  
a shank having a tip end;

a diamond affixed to said tip end by a braze material,  
said diamond forming a point of the tool; and

said diamond being mounted to said tip end within 8  
degrees of a <17,12,24> direction.

#### THE REFERENCE

Anderson

US 6,051,079

Apr. 18, 2000

#### THE REJECTIONS

The claims stand rejected as follows: claims 1-14 under 35 U.S.C. § 112, first paragraph, enablement requirement; claims 1-6 and 8-14 under 35 U.S.C. § 102(b) over Anderson; and claim 7 under 35 U.S.C. § 103 over Anderson.

#### OPINION

We enter a new ground of rejection under 35 U.S.C. § 112, second paragraph, and procedurally reverse the Examiner's rejections.

#### New ground of rejection

Under 37 C.F.R. § 41.50(b) we enter the following new ground of rejection.

Claims 1-14 are rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter the Appellant regards as the invention.

The Appellant's independent claims 1, 13 and 14 require "said diamond being mounted to said tip end within 8 degrees of a <17,12,24> direction" (claim 1), "said wear resistant orientation being within 8 degrees of a <17,12,24> direction" (claim 13), and "positioning said diamond in a wear resistant orientation of within 8 degrees of a <17,12,24> direction" (claim 14).

The Appellant's total disclosure regarding the <17,12,24> direction is (Spec. ¶ 19):

A very desirable super wear-resistant indenting performance can be achieved by mounting the diamond in the  $\langle 17,12,24 \rangle$  direction shown in FIG. 3 or, within 8 degrees from this direction, or within 5 degrees from this direction, as denoted by the dotted line in FIG. 3.

That figure shows a triangle having one side divided into 7 length units, one side divided into 9 length units, and one side divided into 11 length units. The vertices of the triangle are labeled “ $\langle 001 \rangle$ ”, “ $\langle 101 \rangle$ ” and “ $\langle 111 \rangle$ ”. Those symbols appear to represent crystal planes that intersect, respectively, one, two and three axes.<sup>1</sup> A point inside the triangle in figure 3 is labeled “ $\langle 17,12,24 \rangle$ ”, and a dashed circle is drawn around that point.

The Appellant argues (Reply Br. 3):

[O]ne of ordinary skill in the art would know  $\langle 17,12,24 \rangle$  refers to 17 units of length in the x direction, 12 units of length in the y direction, and 24 units in the z direction. Nothing more is needed. Similarly, one of ordinary skill in the art would know that the diamond is aligned along the axis 24.

It is not apparent from the Appellant’s figure 3 whether the  $\langle 17,12,24 \rangle$  direction is that argued by the Appellant. Nor does the Appellant’s disclosure indicate that, as argued by the Appellant, it is the diamond’s z axis that is aligned with the shank’s tip.

Thus, evidence as to the meaning of the above-cited limitations in the Appellant’s independent claims is needed. The Appellant’s above-quoted argument is merely unsupported argument by the Appellant’s counsel, and such attorney argument cannot take the place of evidence. *See In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984); *In re Payne*, 606 F.2d 303, 315 (CCPA 1979); *In*

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<sup>1</sup> See Stanley Wolf and Richard N. Tauber, *Silicon Processing for the VLSI Era, Volume 1: Process Technology* 1-5 (Lattice Press, 2<sup>nd</sup> ed. 2000).

*re Greenfield*, 571 F.2d 1185, 1189 (CCPA 1978); *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

The Appellant's claims 1-14, therefore, fail to comply with the 35 U.S.C. § 112, second paragraph, claim clarity requirement.

In some instances it is possible to make a reasonable, conditional interpretation of claims adequate for the purpose of resolving patentability issues to avoid piecemeal appellate review. In the interest of administrative and judicial economy, this course is appropriate wherever reasonably possible. *See Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993); *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984). In other instances, however, it may be impossible to determine whether or not claimed subject matter is anticipated by or would have been obvious over references because the claims are so indefinite that considerable speculation and assumptions would be required regarding the meaning of terms employed in the claims with respect to the scope of the claims. *See In re Steele*, 305 F.2d 859, 862 (CCPA 1962).

For the reason discussed above, we consider the Appellants' claims to be sufficiently indefinite that determination of enablement or application of the prior art to the claims is not possible. On this basis, we do not sustain the rejections under 35 U.S.C. §§ 112, first paragraph, enablement requirement, 102(b) or 103. It should be understood that this reversal is not a reversal on the merits of the rejections but, rather, is a procedural reversal predicated upon the indefiniteness of the claims.

#### DECISION

The rejections of claims 1-14 under 35 U.S.C. § 112, first paragraph, enablement requirement, claims 1-6 and 8-14 under 35 U.S.C. § 102(b) over

Appeal 2008-1265  
Application 10/718,086

Anderson, and claim 7 under 35 U.S.C. § 103 over Anderson are procedurally reversed. Under 37 C.F.R. § 41.50(b) a new ground of rejection has been entered.

REVERSED, 37 C.F.R. § 41.50(b)

JRG

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